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JUN 12 2007

Application No.: 10/535,053

Docket No.: JCLA12543

REMARKSPresent Status of the Application

The Office Action rejected claims 1 and 4 under 35 U.S.C. 102(e) as being anticipated by Liang et al. U.S. Patent 6,649,037.

The Office Action rejected claims 2-3, and 5-7 under 35 U.S.C. 103(a), as being unpatentable over Liang et al. U.S. Patent 6,649,037.

Claim 1 is amended to more clearly define the invention. The amendments can find support from the specification and drawings, and therefore no new matter is added. After entry of the foregoing amendments, claims 1-7 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of Office Action Rejections under 35 U.S.C. 102

Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Liang et al. U.S. Patent 6,649,037.

Applicants respectfully traverse the rejection for reasons discussed below.

Claim 1 recites "An electrodeionization apparatus, comprising: a plurality of anion exchange membranes and a plurality of cation exchange membranes that are alternately arranged between a cathode and an anode to alternately form at least one concentrating compartment and at least one desalting compartment, wherein the concentrating compartments and the desalting compartments are filled with mixed ion exchangers, and a filling ratio of anion exchanger to cation exchanger of the mixed ion exchanger in the concentrating

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compartments is higher than a filling ratio of anion exchanger to cation exchanger of the mixed ion exchanger in the desalting compartments”.

Liang et al. disclose a two-stage electrodeionization device. The first stage comprises an ion-depletion compartment 10 and an ion-concentrating compartment 20. The ion-depletion compartment 10 is filled with a specialized electroactive media consisting of anion exchange resin and anion resin. The ion-concentrating compartment 20 is filled with a single layer of cation exchange resin. (Col. 14, line 53 to Col. 15, line 2). The second stage has a depletion compartment 30 and a concentrating compartment 40. Both of these compartments contained layers of mixed ion exchange resin. The product from the first stage was fed to the second stage. (Col. 15, lines 9-12). But the present invention as defined in claim 1 is a one-stage electrodeionization device, and the concentrating compartments and the desalting compartments of the electrodeionization device are filled with mixed ion exchangers, **and the filling ratio of anion exchanger to cation exchanger of the mixed ion exchanger in the concentrating compartments is higher than a filling ratio of anion exchanger to cation exchanger of the mixed ion exchanger in the desalting compartments.** Liang et al. do not disclose or teach such features.

For at least the foregoing reasons, applicant respectfully submits that claim 1 is not anticipated by Liang.

Claim 4 depends on claim 1 and, thus, is not anticipated for at least the same reasons.

Discussion of Office Action Rejections under 35 U.S.C. 103

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Claims 2-3, and 5-7 are rejected under 35 U.S.C. 103(a), as being unpatentable over Liang et al. U.S. Patent 6,649,037 applied as obviousness.

As discussed in the above, Liang et al. disclose a two-stage electrodeionization device, the water to be treated must firstly pass through a first module comprising anion exchanger material and cation exchanger material, respectively, and then through a second module comprising mixed ion exchange material. (See Col. 14, line 53-57 of Liang et al.) And according to claim 1, because the concentrating compartments and the desalting compartments are filled with mixed ion exchangers of different ratio, the water to be treated only needs flow through the subject matter of claim 1 once. That is, comparing with Liang et al., the subject matter of claim 1 can produce unexpected results. Further, a person having ordinary skill in the art could not obtain the inspiration of using alternatively positioned concentrating compartments and desalting compartments filled with mixed ion exchangers of different ratio.

Therefore, claim 1 is patentable over Liang. Claims 2-3, and 5-7 depend on claim 1 and, thus, are also patentable over Liang for at least the same reasons. In addition, these dependent claims contain features that further distinguish over the cited reference.

For example, claim 2 recites the "the filling ratio of anion exchanger to cation exchanger of the ion exchanger in the concentrating compartments ranges from 75/25 to 95/5". Clearly, Liang does not teach such a filling ratio for a mixed ion exchanger. Liang teaches that the resins used in the layers of mixed ion exchange resin in the depletion compartment (30, 230) and the concentrating compartment (40, 240) are 50/50 vol/vol MARATHON™ A anion resin and MARATHON™ C cation resin. (Col. 15, lines 12-14; Col. 16, lines 6-7)

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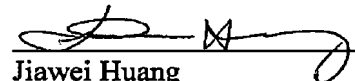
CONCLUSION

For at least the foregoing reasons, it is believed that the claims 1-7 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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4 Venture, Suite 250
Irvine, CA 92618
Tel.: (949) 660-0761
Fax: (949)-660-0809

Respectfully submitted,
J.C. PATENTS


Jiawei Huang
Registration No. 43,330